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Efficiency of Credit Regulation on Profitability of Banks in Nigeria

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Abstract: This study investigated the efficiency of credit regulation on profitability of banks in Nigeria. The independent variables applied Non-performing loans (NPLs); Loan and Advances (LA) and Interest (ITR); while Return on Equity (ROE) proxy profitability as the dependent variable. The populations were all the listed commercial banks in Nigeria Stock Exchange, 2014 to 2020; while purposive sampling techniques selected five banks with the applicable data. The analyses employed: Descriptive Statistics; Pearson Correlation and Regression on the collected secondary data. The result found the adjusted R^2 value to be R^2 (51%), which is jointly explained by the independent variables used; while 49% is explained by other factors outside the scope of this study. Other findings show that NPLs is negative and statistically significant; while LA and ITR are negative and statistically insignificant on the pooled Bank's ROE. The study contributes, with the overall significant of the applied variables and, with the new modernized model. Recommendations are that banks' managers should enhance their capacity in credit regulations, loan managements and also adhere strictly to other financial regulations applicable to financial institutions in Nigeria and elsewhere. The findings' implications are that: care must be taken in generalizing these findings in other institutions; especially those firms that are not categorized among money deposit banks and other firms that do not deal in loaning.

Key Words: Non-performing Loans, Loan and Advances, Interest, Profitability, Return on Equity.

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1. Introduction

Background of the Study

Globally, the development of any economy is anchored on the banking sector and other financial institutions. Central banks of countries have always been seen as the apex of banking institutions because they control money functions of banks and other financial institutions. Banking functioning and financial plans have always been anchored on central banking financial plans, financial policy, set out by the apex bank. Commercial banks and other financial institutions' major capital sources have been on loans and they too are sustained by the central banking system especially in times of financial stress. Krokeme and Eze, (2021), showed that the "collapse of Lehman Brothers, triggered offshoots in economic activity and bank lending rates in many countries in the mid-2007". Mostly, issuing and receiving of loans are main risks that confront banks, (Psillaki, Tsolas, & Margaritis, 2018). Loan worthiness and collaterals has to be determined following loan requests,

(Nwankwo, 2017). Some studies have determined roles of the banking sector to economic growth: (Akpansung & Gidigbi, 2014; Akpansung & Babalola, 2012; Bayoumi & Melander, 2008; King & Levine, 1993; Bencivenga & Smith, 1991). Further, Ujunwa, Salami, Nwakoby, and Umar, (2012), argued that "Nigeria's economy is bank based and thus, a crisis in banking functions could collapse the entire economy". The history of economic crises, loan and management of loans in Nigeria became evident in Nigeria during the introduction of SAP, Structural Adjustment Program in the early 1980's. The SAP saga in Nigeria gave credence for stringent regulation on banking and lending structures and other measures that regulates banking functions and control of other financial institutions. Some of these known measures are: the Central Bank of Nigeria (CBN) Decrees No 24 of 1995; The Nigerian deposit Insurance Corporation Decrees No 22 of 1998; Bank and Other financial Institution Decree (BOFID) 1999; Economic and Financial Crime Commission Act 2004; (CBN) Prudential guideline for Deposit of Money Banks in Nigeria; Money Laundry Act and so on, (Ugwu, 2020). Prior studies such as: (Sanusi, 2012; Anyanwu, 2010 and Balogun, 2007) observed the impact of banking reforms on economic growth and the financial institutions in Nigeria. Thus, major aims of these banking and financial reforms are to ensure that there are provisions for enough loan grants, proper management and regulations on various critical segments of the economy in order to enhance economic growth and stability.

Statement of Problems

Financial institutions are very important in the economic growth of a nation as it helps in the easy flow of credit which leads to the investment opportunities in productive sectors. The soundness of banking institutions is an essential consideration for financial system stability, (Singh, Basuki, Setiawan, 2021). But, constant merging of banks in Nigeria is an indication that deposit money banks and other financial institutions have continued to approve decisions that are not vetted; resulting in cases of loan defaults and non-performing loans, massive extension of credit and direct lending. Thus, in trying to proffer solutions to loan defaults, these have lead to policies as mentioned above to: minimize the negative effects on mergers in banks; bank stringent lending policies; review of laws to be in line with the global standards; well capitalized banks which are expected to be profitable; liquid banks that are able to meet the demands of their depositors; and maintenance of required cash levels with the CBN. We argue here, what are the proper means of regulating banking loans to have an optimum profitability and financial performance of other institutions in Nigeria? In critical observations of the forgoing, we aim to determine the Efficiency of banking Loan regulation/management on Bank Profitability in Nigeria. We have observed other studies who have found that secured and unsecured loan ratio and bank's performance was not significant such as: (Uwalomwa, Uwuigbe & Oyewo, 2015); credit risk on the banking profitability was negative and significant; (Abu, Sajeda & Mustafa, 2015); Ogboi et al., (2013) found credit risk management and capital adequacy to be positive; while loan management and performance was found insignificant (Lawrence, 2013). More-so, Ogundajo, Oyedokun and Okwuosa, (2020); Muhammad, Asima and Zahid (2020); Onyefulu, Okoye, and Orjinta (2020); Ifeanyi and Oguezue, (2020), all showed negative relationships with profitability and performance. These various findings: some positive and some negative indicate that problems still exist and could also be attributable to the variables applied and various designs and methodologies in their analyses. This study is determined to curb this gap by combining these variables: loans and advances; non-performing loans; interest rates to test whether they will impact on bank performance. This study specifically selected five banks with robust and glaring information from annual published financial reports from the Nigeria Stock Exchange.

Objectives of the Study

The broad objective of this study is to determine the Efficiency of banking Loan regulation/management on profitability of banks in Nigeria.

The specific objective of the study includes: to determine the efficiency of loans and advances; non-performing loans; and interest rate on the profitability of deposit money banks in Nigeria

Research Questions

The research questions of this study are: How do Loans and advances; non-performing loans; and interest rate affect profitability of banks in Nigeria?

Statement of Hypotheses

These hypotheses have been posited for this study:

Loans and advances; non-performing loan; and interest rate are not significant on profitability of banks in Nigeria.

2. Review of Related Literature

Loan/Credit Regulation/Management

The issue remains that the efficient and effective function of the banks indicates the financial stability of any nation (Gnawali, 2018). Some views still prevail that despite the operating costs of holding a large portfolio of loans, bank profitability should increase with a higher ratio of loans, (Singh, Basuki, Setiawan, 2021). The different types of risk which are faced by banks, credit risk affects more on a banks return because banking income is derived mainly from loans in the form of interests, (Laryea et al., 2016). So in reality, banking transactions focus more on receiving deposits and granting of loan/credit facilities, and the subsequent challenge of the risk of loan management. Greuning and Bratanovic, (2003), stated that "loan is the faith the lender has in a borrower depicting that resources can be transferred to the borrower without immediate payment". In another term, credit is an indication of loans that result in debt Gieseche, (2004); and credit granting, strengthens financial institutions in their financial status, (Tetteh, 2012. Credit plays a very vital part in the economic growth and development of a country. Breuer (2006) found that the problems of bank loans are the effects of decisions made by banks in the double functions as financial intermediaries. These are responsible for conflicts of interest that can result in bank mismanagement and consequent loans problems. Bank functions activities have always been on a wide structure that have been influenced by (legal, political, sociological, economic, and banking institutions) enacted rules can impact the quality of bank loans.

Loan and Advances

Loan and advances received, if properly managed through coordinated investment will expand any economic system, improve performance through subsequent returns on financial assets (Meltha, 2008). Loans and advances simply mean giving out in different ways things such as money or money equivalents, goods or items, property or tangible materials either in large quantity or small quantity to other people. These money or tangible loans have always been offered in business terms which most at times collaterals or trustees have always been required to guarantee such loans and advances. The giver entrusts the loan with expectation of interests in returns and the final repayment of the items given out at the expirations of the agreed terms. Extension of loans and advances has been a means of business boost and expansion to firms and the positive outcome has been viewed in the positive terms in firm performance. The apex banking of countries from time to time brings out regulations that stimulate business firms to accept advances from commercial banks to boost business functions. When money is properly circulated and expanded, it increases the domestic production of the economy. More demand for money by firms will be enabled only when the interest rate or terms of the loan for both short and long-term loans are seen favorable and agreeable by firms, and also when the time requirement for interests and the capital repayments are acceptable to the firms' terms of business. Paul and Emmanuel (2016) found that commercial bank credit, loans and advances in broad money supply are positive on firm performance. Oladapo and Adefemi (2015) found that Deposit Money Banks' loans and advances on economic growth in Nigeria have significant positive contributions on economic growth. Courage and Leonard (2019) indicated that commercial bank credit has significant effects on economic growth in both short run and long run.

Nonperforming Loan (NPL) and Bank Profitability

Singh, Basuki, Setiawan, (2021) stated that Non-performing loan (NPL) is a major problem in the banking industry. Kroszner, (2002) defined a NPLs as a "credit facility or advance in which the interest and the principal amount have remained past due for a specific period of time, known as Non-performing assets' '. The banking norms is that if payments of short term loans are late, it is categorized overdue and the moment a payment turns really late within 90 days, the loan is termed as NPLs. Kithinji and Waweru, (2007), stated that a high level of non-performing assets, compared to similar lenders, may be a sign of problems. In measuring banking industry performance, it is always anchored on the level of NPLs and accounts, (Stuti & Bansal, 2013). NPLs can be an indicator of the beginning of a banking crisis as it adversely affects the economic strength of the nation by reducing credit growth. NPLs block interest revenues, deduct investment opportunities as well as create liquidity crises in a financial system, which can bring bankruptcy problems and also worsen economic activities (Singh, Basuki, Setiawan, 2021). Also, Kroszner (2002) agree that they are closely associated with banking crises. White (2002) links the Japanese financial crisis to NPLs. Bloem and Gorter (2001) noted that they are mainly caused by an inevitable number of wrong economic decisions by individuals. Messai and Jouini (2013), found that the problem loans vary negatively with the growth rate of GDP, the profitability of banks' assets are positive with the unemployment rate, the loan loss reserves to total loans and the real interest rate. Louzis et al., (2012) found that NPLs are explained by macroeconomic factors and management quality. Berger et al., (1997), linked Problem Loans with Cost efficiency, and this affects profitability. NPLs are undesirable costs to a loaning bank and decrease the bank's performance (Chang, 1999). Kroszner (2002), stated that they are closely associated with banking crises. Batra (2003) says that they impact the psychology of bankers in respect of their disposition, credit giving and loan expansion and bank's functioning. They also impact operational efficiency which in turn increases profitability, liquidity and solvency of banks, (Michael et al., 2006). In the same vein, Bhattarai, (2017) asserted that the NPLs are significant and negative on Return on Equity ROE. Bloem and Gorter, (2014) stated two common measurements for NPLs Assets as; NPLs ratio and NPLs coverage ratio. NPLs coverage ratio refers to the ratio of allowance for losses on NPLs to total NPLs. This is computed as follows; Provisions for Losses on NPLs over NPLs. NPLs ratio refers to the ratio of NPLs to total loans (gross of allowance for probable losses). It is measured as NPLs over total loans and advances. Thus, we measures it using (Bloem & Gorter, 2014) method which is calculated as: NPL = NPL Total Loan NPL = NPL Total Loan.

Interest Rate (ITR)

Keynes indicated that interest rate is the reward for not hoarding, and parting with liquidity for a specific period of time; and is directed more on the lending rate. On the other hand, Adebiyi (2002) said ITR is the return or yield on equity or opportunity cost of deferring current consumption into the future. Jhingan (2003), explained that interest is the price which equates the supply of 'Credit' or savings plus the net increase in the amount of money in the period, to the demand for credit or investment plus net 'hoarding' in the period. Ibimodo (2005) says that ITR is the rental payment for the use of credit by borrowers and return for parting with liquidity by lenders. Also, Bernhardsen (2008) declared that ITR is the real ITR, at which inflation is stable and the production gap equals zero. Another observation from prior study holds that ITR levels are part of the macroeconomic sect ups (Jacob & Tobias, 2017). Also, bank profit literature considers these factors as a by-product, (Borio, Gambacorta & Hofmann, 2015). More so, Irving Fisher (1936) states that ITR are charged for several reasons to ensure that the creditor lowers his or her exposure to inflation. Borio et al. (2015) found that net interest income increases with short-term ITR and has a positive relationship with the slope ITR yield curve, which corresponds to the findings of Albertazzi and Gambacorta (2009). Agreeably, Alessandri and Nelson, (2015) show evidence of a systematic effect of market ITR on bank ROA. On this, Bikker and Vervliet (2017) found that the net interest margin increases with the short-term ITR; but in response to higher ITR, banks. Alessandri and Nelson (2015) found that a steep yield curve boosts bank income margins. Janglani and Sandhar, (2013) and Ugwu, (2020) view the major measures of profitability ratios in relation to sales and to

investment, Gross profit margins (GPM), net operating margin (NOM), return on assets (ROA), return on equity (ROE), and return on capital employed (ROCE). But this study applies ROE.

Bank Performance Measured as Return on Equity (ROE)

Bank Loan/Credit impacts Return on assets (ROA) or Return on Equity (ROE) which is used to measure firm performance. This is defined by the ratio of net income over total assets. Bank loan performance can also be measured using Return on equity (ROE) which shows the ratio of net income over total equity, and is also another bank performance indicator. ROE can be measured as the profitability of a business in relation to the equity. As a result, shareholder's equity can be calculated by taking all assets and subtracting all liabilities; ROE can be seen as a return on assets minus liabilities. ROE measures how many amounts of profit are generated for each amount of shareholder's equity. ROE has been viewed as a metric of how well banks utilize its equity to generate profits.

Theoretical Framework

Credit Market, Anticipated Income and Shiftability Theory

Three models have been considered necessary for this study and the Prior model of the neoclassical credit market postulates that the terms of credit clears the market. This theory states that collateral and other restrictions remain constant as the ITR is the only price mechanism. But, with an increasing demand for credit and a given customer supply, the ITR rises, and vice versa. Ewert, (2000) says that the higher the failure risks of the borrower, the higher the interest premium. Alao, Chodechai, (2004) says that the degree of openness of an economy is the analysis of the influence of both internal and external factors on ITR movements which work in a semi-open economy like Nigeria. Again, Anticipated Income theory relates that banks' management can plan its liquidity based on the expected income of the borrower to enable the bank to grant medium and long-term loans, short-term loans as long as the repayment of these loans are linked by the borrowers expected income to be paid in the periodic and regular premiums. By this, banks maintain high liquidity, through cash inflows (Okoh, Nkechukwu & Ezu, 2016). Thirdly, Shiftability theory keeps the banks liquid by supporting the shifting of assets. This applies when a bank is illiquid and sells its assets to a more liquid bank. The approach allows the banking system to run more efficiently with fewer reserves or investing in long-term assets. By this, the banking system tries to avoid liquidity crises by enabling banks to always sell or report at affordable prices (Okoh, et al., 2016).

Empirical Literatures

Singh, Basuki and Setiawan, (2021) investigated the effect of NPLs on profitability of Nepalese Commercial Banks from (2015-2019). The study employed multiple regression analysis on the dependent variable ROA, Capital Adequacy Ratio (CAR), Bank Size, GDP growth, and Inflation as explanatory variables. Findings show that ROA, Bank Size, GDP, and Inflation have a significant effect on NPL but CAR is not significant on the NPLs of banks.

Muhammad, Asima and Zahid, (2020) studied the size of (NPLs) in the stability of Pakistan banking sector from (2005-2017). The study applied profitability, operating efficiency, capital adequacy and income diversification. They found that operating efficiency and profitability were negative and significant with NPLs; while capital adequacy and income diversification have negative and insignificant impact on NPLs.

Bikker and Vervliet, (2017) investigated the impact of a low interest rate environment on the soundness of the United States banking in terms of profitability and risk-taking. The analysis applied both dynamic and static modeling methods and various estimation techniques and they found that the low interest rate impairs bank performance and reduces net interest margins.

Esther, Matthew and Angela, (2016) worked on NPLs and bank profitability in emerging markets. Their methodology used a sample of 22 Ghanaian banks from (2005-2010) and the data collected was analyzed with fixed effect panel models. Result found that bank-specific factors such as macroeconomic determine NPLs and inflation and industry concentration are not significant in NPLs; but both are positively related to NPLs.

Kohlscheen, Murcia and Contreras (2020) studied the determinants of bank profitability using 534 banks from 19 emerging market economies. They found that higher long-term ITR boosts profitability, while higher short-term rates reduce profits and increase costs.

Catur and Dewi, (2020) analyzed the effect of NPL on bank profitability. The study used 26 banks on the Indonesian Stock Exchange (2009-2017). They found that NPLs has a significant and a negative influence; Liquidity ratio and gross domestic product have significant positive influence; whereas capital adequacy is not significant on profitability of a bank.

TengTeng, Kun Hu, and Udaibir, (2019) studied bank profitability and financial stability with non-interest income and retail oriented business models. They collected data from 431 US banks (2004-2017) and analyzed it with Panel Regression. Results revealed that profitability is negative with both bank's systemic risk and its idiosyncratic risk, and an over-reliance on noninterest income, funding and leverage is related with higher risks. Problem loans ratio and the cost-to income ratio influence bank performance.

Ogundajo, Oyedokun and Okwuosa, (2020) studied credit management and bank profitability using NPLs, loan loss provision and loan and advances. They collected data from five deposit money banks DBM (2013-2017) and analyzed it with regression. Finding where that credit risk is positive and significant on profitability; NPL is significant and negative on return on capital employed ROCE; both loan loss provision and loan and advances are positive and significant on ROCE.

Onyefulu, Okoye, and Orjinta (2020) examined credit risk management and profitability of (DMBs) on two selected West African countries, using (20) DMB from (2009-2018). Analyses used descriptive statistics, Pearson correlation and panel regression. Their findings show that credit risk has a negative and significant impact on performance of banks in both Ghana and Nigeria.

Olaoye and Fajuyagbe, (2020) explored the effects of credit risk management on the profitability of (10) DMB in Nigeria (2008-2017) applying NPLs on ROA and provision for doubtful debts on ROA. The data collated were analyzed using both descriptive and inferential methods of analysis. Results show that NPLs exert a positive and insignificant impact on ROA; provision for doubtful debts is positive and significant on ROA.

Mafumbo, (2020) studied credit management on performance of commercial banks in Uganda. The secondary data collected were analyzed with multiple regression and the findings indicated credit management is significant on banks returns. Also, NPL is significant on bank performance. But, credit policy is not significant on profitability but, credit risk control, capital adequacy are both significant on bank performance. On the same credit management in Nigeria DMB, Ifeanyi and Oguezue, (2020) collected that from (2006-2015) and analyzed them with multiple regressions. They found that loans and advances and loan loss provision are positive and insignificant, while NPL are negative and insignificant on ROA.

Agu and Ogbuagu (2015) used vector auto regression on lending rate, bad debt and credit management and bank returns in Nigeria DMB, (2007-2013). Using, both primary and secondary data and the finding shows that incessant increase in interest rate is a strong and statistically important factor that causes bad debt in Nigeria.

Okoye and Richard, (2013) investigated bank lending rate and performance of DMB (2000-2010). They extracted secondary data analyzed with econometrics regression. Results confirmed that the lending and monetary policy rates are significant and positive on profitability of Nigerian deposit money banks.

Enyioko, (2012) studied interest rate policy (ITRP) on performance of DMB in Nigerian. The study analyzed (20) banks, using 2004 as the pre-consolidation and 2005, 2006 as post-consolidation periods for the analysis. He found that the ITRP has not improved bank performances significantly. Rather, it has contributed marginally to the growth of the economy.

Makinde, (2016) explored interest rate and DBM in Nigeria, (2000-2013). The work applied secondary data analyzed with OLS and found ITR is negative on DMB, implying that ITR has not improved customers deposits in DBM within Nigeria.

Okoye and Eze, (2013) investigated bank lending rates on the performance of Nigerian DMB from (2000-2010). They used OLS to analyze the variables: interest, lending rate, monetary policy rate, bank credit; and found that lending rate and monetary policy rate have positive and significant effects on performance of DMB.

Aburime, (2008) sampled banks with 1,255 individual observations (1980-2006) to investigate the macroeconomic determinants of bank profitability in Nigeria. The result revealed that real interest rate, inflation, monetary policy and foreign exchange regime are positively on banks' ROA.

Epure and Lafuente (2012) examined bank performance and risk for Costa-Rican banking (1998-2007). The results showed that performance is an offshoot of regulatory changes and that risk impacts banks; NPLs is negative on efficiency and ROA; while the capital adequacy ratio is positive on net interest margin.

Abu, Noman, Sajeda, Mustafa and Hasanul (2015) studied credit risk on Bank profitability in Bangladesh commercial banks. They used data (2003-2013) and NPL, credit Adjutancy, Return on asset (ROA), Loan and Advances as study variables. The study found a negative and significant effect of capital adequacy ratio return on average equity.

Okaro (2013) examined the impact of credit risk management on capital adequacy and banks financial performance in Nigeria (2004-2009). Results indicated that sound credit risk management and capital adequacy are positive but loans and advances are negative on banks' ROA.

Olawale (2015) Studies the effect of Credit risk on the Performance of DMB in Nigeria using the variables of ROA, Loan and advances, NPL and Total deposited. He used secondary data analyzed with the OLS model and the result is that bank profitability is influenced by the levels of Loans and advances.

Sujeewa (2015) Studied the Impact of credit risk management on the Performance of Commercial Banks in Sri Lanka, with secondary data from 24 banks. The variables were on ROA and total loan. Analyzing it with a regression model, the study indicated that NPLs and provision have an adverse impact on the profitability.

3. Methods of Research

Research Design and Nature and Sources of Data

This work applied ex-post facto research design on financial reports of selected firms involving gathering records of past events as in, (Ugwu, 2020; Ordu, Enekwe & Anyanwaokoro, 2014). The nature of our data is Ex-post Facto sourced from Nigeria Stock Exchange Fact Book where company annual reports are published.

Study Population and Sample Size

The Population of this study comprised all the listed commercial banks in Nigeria Stock Exchange as of 2014 to 2020. The sample size applied purposive sampling techniques, making use of the availability of applicable required data. This restricted the study on five banks that have the applicable data within the selected period.

Variable Application

Study Model Specification

ROE = (ITR, NPL, LA);

Where:

BF = Bank profitability used by Bikker and Vervliet (2017); Singh, et al., (2021) is proxy by ROE = Return on equity in percentage, is computed as profit after tax divided by Total equity;

ITR = interest rate as found in Bikker and Vervliet (2017); Singh, et al., (2021)

NPLs=Non-performing loans as in Bikker and Vervliet (2017); Singh, et al., (2021) is defined as Non-Performing Loans in thousands, is the amount of individually impaired loans or NPLs reported under loans and advances of accounts.

NPLs = NPLs to Total Loan,

LA = loan and advances as in Singh, et al., (2021).

The above equation can be restated in an econometric form as;

We adapt the work of Courage & Leonard (2019) model as modified by Krekeme and Eze, 2021

ROA = β0 + β1Man + β2 Agro + β3Min + β4Int + υ

The above equation can be restated in an econometric form as;

$ROE_{it} = \beta 0_{it} + \beta 1ITR_{it} + \beta 2NPLs_{it} + \beta 3LA_{it} + \upsilon_{it}$

Variables definitions are as follows:

ROE = Return on Equity of the bank, i in period it; β_o = Constant term (intercept) of the study model; β_1- β_3 = Coefficients of profitability of the banks; $\mu\mu_{it}$ = Component of unobserved error term of the firms, i in period *t;* ITR_{it} = Interest *i* in period *t;* $NPLs_{it}$ = Non-Performing Loans *i* in period *t;* LA_{it} = Loan and Advances *i* in period *t*, *while t=5years period.*

Method of Data Analyses

The analysis methods employ Descriptive Statistics, Pearson Correlation and Regression Ordinary Least Square (OLS).

A priori, Expectation

Our a priori expectation is that the findings will be positive and eventually agree with the theories applied in this study. Loan management will be significant on profitability of banks in Nigeria

4. Data Presentation, Analysis, Discussions and Summary of Findings

Table: 1. Descriptive Statistics Tables

	ROE	NPLs	LA	ITR
Mean	2.06600	13.6223	16.2724	6.59714
Median	1.20000	12.2485	14.4121	5.54000
Maximum	22.1000	20.4043	22.1374	12.8500
Minimum	0.11000	0.27763	10.4487	4.70000
Std. Dev.	3.67004	3.93779	3.42906	2.70432
Skewness	4.82649	-0.76150	0.34283	1.71898
Kurtosis	26.9117	4.77555	1.51839	4.40953
Jarque-Bera	969.722	7.98022	3.88687	20.1344
Probability	0.00000	0.01849	0.14321	0.00004
Sum	72.3100	476.783	569.534	230.900
Sum Sq. Dev.	457.954	527.213	399.787	248.654
Observations	35	35	35	35

Note: ROE= Return on Asset, NPLS = Non-performing Loans, LA= Loan/Advances, ITR = Interest Rate

Source: Author's computation, (2021)

Table 1 is the descriptive statistics depicting the standard deviation, mean, maximum and minimum values of the variables. ROE shows shareholders' investment has a maximum value of 22% and a minimum value of 0.1% with; mean of 2.0% with Standard deviation Std of 3.67%; while NPLs has a maximum of 20.4% and minimum of 0.27%, with mean of 13.6% and, Std of 3.9%. LA has a maximum of 22.1% and a minimum of 10.4%, with a mean value of 16.2% and Std of 3.4%. ITR has a maximum of 12.8% and a minimum of 4.7% with a mean of 6.59% and a standard deviation of 2.7%.

Skewness Measures is positive for the independent variables of LA and ITR and the dependent variable. This shows that the distribution has a right long tail which is Skew for all the variables except NPLs. Also, the Kurtosis Measures of ROE, NPLs and ITR show that Kurtosis K is greater than three. It can be defined as a tail with fat distribution and shows it is peak in appearance as a normal statistical distribution. LA shows that the Kurtosis, K is less than the value of three digits by standard measures in statistical distribution. Lastly, the Jarque-Bera (JB) test has values more than 5% and this shows it is normal and there is no existence of outliers.

Table 2 Correlation Analysis Result

	ROE	NPLs	LA	INT
ROE	1.00000			
NPLs	0.05572	1.00000		
LA	-0.29385	0.21658	1.00000	
INT	0.01717	0.23660	0.14993	1.00000

Note: ROE = Return on Equity; NPLs =Nonperforming loans; ITR = Interest; LA = Loan/Advances.
Source: Author's computation, (2021)

Pearson Correlation results show that there is a positive but weak relationship among the variables with ROE, ITR and NPLs respectively, with exception of LA which indicates a negative relationship with ROE.

Table: 3 Panel Regression Outcomes

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.45414	13.0903	0.18747	0.8527
NPLs	-0.52442	0.34288	-1.52945	0.0082
LA	-0.10237	0.77310	-0.13241	0.8957
ITR	-0.07241	0.23348	-0.31013	0.7589

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.52350	Mean dependent var	2.06600
Adjust. R-squd	0.50535	S.D. dependent var	3.67008
S.E. of regression	3.45188	Akaike info criterion	5.53270
Sum squared resid	309.802	Schwarz criterion	5.93267

Log likelihood	-87.8231	Hannan-Quinn criter.	5.67082
F-statistic	7.55419	Durbin-Watson stat	2.49896
Prob(F-statistic)	0.00087		

Note: NPL=Non performing Loans; LA = Loan and Advances; ITR = Interest.
Source: Author's computation, (2021)

Interpretation of the Regression Result

The R^2 is 0.52350 which is approximately 52%, shows the goodness and fitness of our model; while the adjusted value of R^2 0.50535, shows that about 51% of the systematic variations in the criterion variable in the pooled banks over the period of interest was jointly explained by the independent variables; while 49% are explained by other factors not captured in the model or outside the scope of this study. The f-statistics is 7.5541 with probability value of 0.0000, which is less than 0.05 and by this the study accepts the alternative hypothesis that the explanatory variables (NPLs, LA and ITR) are jointly statistically significant on the dependent variable, ROE.

A priori expectation based on the theories applied indicates NPLs has -0.524 and this shows that decrease in NPL increases ROE by 52%; while LA has -0.1023/10%, which indicates that a decrease in LA increases 10% on ROE; then the ITR value is -0.0335, decreases ITR and thus increase ROE based on the theoretical expectation. Durbin Watson statistics is approximately 2; showing the absence of autocorrelation among the variables.

Hypothesis Testing and Discussions of the Findings

H01: Non-Performing Loan Has No Significant Effect on Return on Equity

The t–test for NPLs is -0.52944 with a probability of 0.0082, which is less than the 0.05 significance level. Therefore the study rejects the null hypothesis and accepts the alternative hypothesis that NPLs is significant on ROE.

H02: Loan and Advances Has No Significant Effect on Return On Equity

The study t–test LA is -0.1324 with corresponding probability of 0.8947, which is more than the 0.05 level of significance and by this the study rejects the alternative and accepts the null hypothesis LA is not significant on ROE.

H03: Interest Has No Significant Effect on Return on Equity

The model has the ITR as -0.3101 with corresponding probability of 0.7589, which is greater than the 0.05 level of significance, and thus the study accepts the null hypothesis, which says that INT is not significant on ROE.

Discussions of the Findings

Non-Performing Loan Is Negative and Statistically Significant

In the first hypothesis the result found that NPLs is negative but has a significant impact on ROE. This agrees with the findings of; (Mohammed et al., 2020; Cature & Dewi, 2020; Onyefulu et al., 2020; Ogundajo et al., 2020; Ifeanyi & Ogunzue, 2020; Bhattarai, 2017), but disagrees with (Singh et al., 2021; Olaoye & Fajuyagbe, 2020; Mafumba, 2020); while it also disagrees with (Epuru & Lafuente, 2012 and Sujeewa, 2015).

Loan and Advances Is Negative and Statistically Insignificant

The result found that LA is negative but statistically insignificant on bank ROE. This findings agrees with the finding of Abu, et al., (2015) and disagrees with (Uwalonwa, et al.,2015; Enyioko, 2012 and Okaro, 2013), whose results were negative, and (Ogboi, et al., 2013; Lawrence, 2013; Paul & Emmanuel, 2016; Oladipo &

Adefemi, 2015; Micheal, et al., 2006 and Sujeewa, 2015), whose findings were positive.

Interest Is Negative and Statistically Insignificant

This study result found that Interest is negative and insignificant on profitability of banks. The finding did not agree with the findings of: (Alessandri & Nelson, 2015; Okoye & Richard, 2013; Okoye & Eze, 2013; Aburima, 2008; Kohlscheeen, et al., (2020) and Bikker and Vervliet, (2017),whose findings show that low interest is negative.

Summary of Findings, Conclusions, and Recommendations

Summary of the Findings

The summary of the findings of this study are that: non-performing loan is negative and statistically significant; Loan and advances is negative and statistically insignificant; while Interest is negative and statistically insignificant on the selected Banks' profitability in Nigeria

5. Conclusions

Finally, we find the explanatory variables applied NPLs; LA and ITR; while the dependent variable is ROE and Secondary data was collected and the analyses applied Descriptive Statistics; Pearson Correlation and Ordinary Least Square. The final result shows that NPLs is negative and statistically significant; while LA and ITR are both Negative and Statistically Insignificant on profitability of banks in Nigeria.

Contributions to Knowledge

The study contributes, with the overall impact of the variables on profitability of the selected banks and the new modernized model used in the study.

Recommendations

The recommendations are that banks should enhance their capacity in credit analysis and loan management and also adhere strictly to financial regulations applicable to financial institutions in Nigeria and elsewhere.

Implications of the Study Findings

The findings implications are that care must be taken in generalizing these findings in other institutions, especially those that are not categorized among money deposit banks, and other firms that do not deal in giving loans.

Further Study

Further study should be carried out on the same topic using different variables, since the systematic variations of the findings of this study indicated 49% variations that are explained by variables outside the three independent variables applied in this study.

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